Groveland File

THE CALIFORNIA

DIVISION OF FORESTRY

IN 1957

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

Governor
Goodwin J. Knight

Director of Natural
Resources,
DeWitt Nelson

The California

DIVISION OF FORESTRY

in 1957

F. H. Raymond
State Forester

The State Board of Forestry

Wendell T. Robie, Chairman
Auburn

J. J. Prendergast
Redlands

E. Domingo Hardison
Santa Paula

Russel H. Ells
Willits

Kenneth R. Walker
Atherton

W. B. Carter
Lancaster

John Baumgartner, Jr.
San Martin

California Division of Forestry in 1957

ORIGIN OF THE DIVISION

The nation's first Board of Forestry was established in California in 1885, but it withered away in 1893. This was an era of rapid industrial expansion driven by private initiative. Only a few people were concerned about the terrible and increasing damage caused by uncontrolled forest and watershed fires. And the Board was furnished little means in either authority or money with which to labor. It was hardly more than an educational institution, but as such it should be honored.

In 1905, primarily through the efforts of Governor George Pardee and his friend U. S. Forester Gifford Pinchot, the Board of Forestry was reconstituted and the office of State Forester established. Yet the Legislature declined to appropriate funds for forest protection. Until the First World War the State Forester could accomplish little except decry the treatment of forest lands and the poverty of his office. Fire protection, such as it was, was accomplished at county or private expense under the direction of volunteer State Firewardens.

Then after the wartime sabotage of grain and lumber had shocked the nation, the Legislature in California made a biennial appropriation of $25,000 with which the State Forester could enter mutual agreements to

accomplish cooperative fire control work. Through matching Federal aid funds, four Rangers were hired during the summer of 1919. Thenceforth, the "Board of Forestry", as the organization was called, grew steadily but ever so slowly. Several county fire departments grew even faster upon their own initiative and under the direction of their own chief wardens. The State has continued to allot to these few independent agencies a share of the funds acquired by the State Forester for fire protection upon lands of "statewide interest".

In 1927 Governor Young brought about a considerable reorganization and coordination among the agencies of State government. Those boards and commissions which were involved with the use of natural resources, such as forests, parks, minerals and oil, or fish and game were gathered into a Department of Natural Resources under the general supervision of a Director. A Division of Forestry was created within the department. The State Forester became Chief of Division and was no longer a member of the Board of Forestry. The Board was now charged with establishing general policy for the guidance of the Division, and no longer with the responsibility for administration.

THE STATE BOARD OF FORESTRY

Members of the Board are appointed by the Governor for a four year term upon a staggered basis to ensure continuity of membership. Of seven members, one each respectively shall represent the pine timber producing industry, redwood, forest land ownership, range livestock, agriculture, water use, the public at large. Currently the law sets forth the duties of the Board of

Forestry as follows:

> The board shall represent the State's interest in the acquisition and management of State forests as provided by law and in federal land matters pertaining to forestry, and the protection of the State's interests in forest resources on private lands, and shall determine, establish, and maintain an adequate forest policy. General policies for the guidance of the Division of Forestry shall be determined by the board.

There were no changes among members of the Board during 1957. However, in January 1956, R. S. Kearns of Mantell was succeeded by Kenneth Walker; R. W. Matthews of Eureka by Russell Ells; A. T. Spencer of Winters by John Baumgartner, Jr.

On January 15, 1958, William S. Rosecrans of Los Angeles retired after the completion of 14 consecutive years as Chairman of the Board of Forestry, establishing a record in that position exceeding by five years that of former Governor George C. Pardee, the three times chairman. Mr. Rosecrans was succeeded in office by Wendell T. Robie who had by this time established an all-time record of service as a Board of Forestry member with 17 years in total. He had been a member during the Merriam administration in 1936-39, and was again appointed when Governor Warren took office.

During 1957 the Board of Forestry held seven regular meetings, generally of two day duration. In addition, a joint conference was held in Seattle in December with the Boards of Forestry of Oregon and Washington. Other than the usual broad range of interests discussed by and before the Board during 1957 there was considerable concentration upon the matter of timber taxation as involved in the State Constitution. In 1926 the Constitution was amended to exempt from ad valorem taxation all growing timber until maturity had been established. The Board of Forestry is to be represented in a three-man board to determine within any county the time of

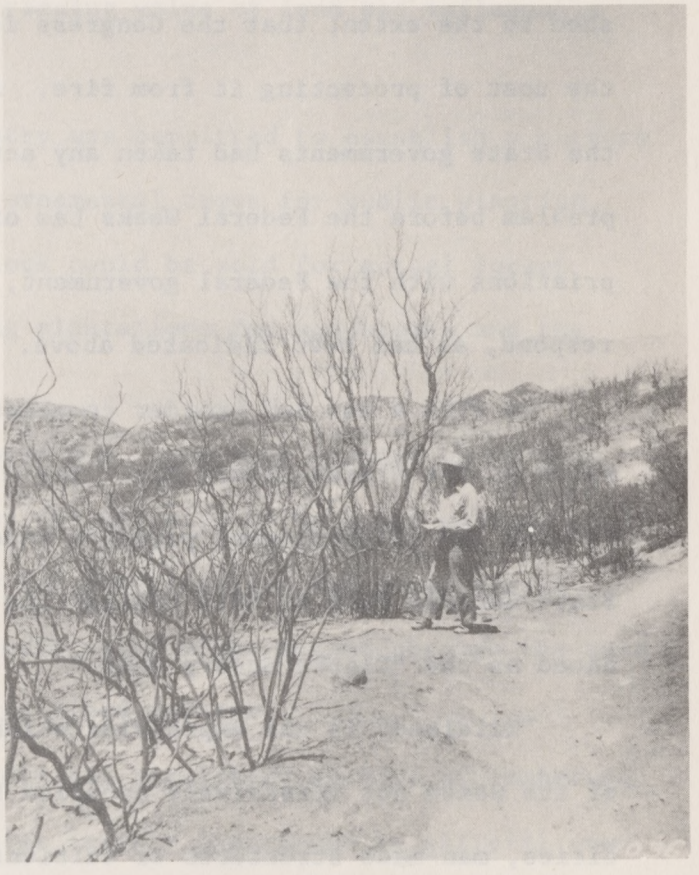
maturity of specific second-growth stands for taxation purposes. With the passage of 30 years has come increased county tax burdens, modification in timber harvesting methods involving more selection of trees during cutting, the harvesting of second-growth trees and other changes. Several questions have arisen regarding the intent and requirement of the law. Numerous conferences were held, involving the State Board of Equalization, county assessors, the timber industry and the public. In 1955 a Timber Maturity Board was duly created for the County of Humboldt. Mr. Robie was appointed by the Board of Forestry to sit as its representative member.

MEANING OF TERMS: STATEWIDE INTEREST, WILDLAND, ZONES

The people, through their representatives in government, have long declared that the continued prosperity and welfare of the nation is to a great extent dependent upon the wise use, the protection, and the replenishment (wherever possible) of the natural resources of the land. In some cases the nation or State has assumed complete ownership of the land in order to manage and protect the resources for the people forever, as in the case of National and State Forests and Parks and Game Refuges. Yet even upon privately owned land there is often a considerable "public" interest. Timber requires many years to regenerate and the growing crop requires special recognition in taxation and protection because it is a vitally important resource of the nation. Water is the most valuable resource flowing from the wildland of California to the areas of agriculture, industry and population. All of the people must help protect and conserve

Young coast redwoods destroyed by fire.

Timber and chaparral fires destroy public values represented by the national economic interest in the timber industry and by the impairment of watersheds. Soil and ashes unprotected from heavy rainfall clog the natural seepage channels; wasted water runs off the land surface carrying debris onto city streets and agricultural lands and silting up expensive reservoirs behind dams.



After a watershed fire in San Diego County

that water production regardless of the ownership of land upon which it originates. A cover of vegetation upon the soil is necessary to hold the soil in place and allow the water to percolate into natural underground channels. On those lands owned by the State or by private persons, where the inherent value of growing timber, or the watershed, possesses (in the judgement of the Board of Forestry) a public interest worthy of an expenditure of public money for its protection then such lands are called lands of "statewide interest" or "State interest Zone."

Some of this statewide interest land is also considered by the Federal government to possess public values in timber and general watershed to the extent that the Congress is willing to provide a portion of the cost of protecting it from fire. As a matter of fact, almost none of the State governments had taken any action to meet the fire protection problem before the Federal Weeks Law of 1911 induced them to match appropriations with the Federal government, and even then California did not respond, as has been indicated above.

In 1924 a new and broader cooperative law was passed by Congress known as the Clarke-McNary Act. The U. S. Forest Service administers Federal aid reimbursement payments under this act which are paid into the State General Fund to help protect the private and State owned land designated as the "Clarke-McNary Zone."

"Wildland" is the expression which most easily embraces all the land of the State not intensively occupied by human beings for such uses as cities, man-made structures or cultivated crops. Forest, woodland, brush, grassland, desert and barren lands are therefore considered to be wildland in spite of the material value of any particular area.

THE DIVISION'S BUSINESS

As an arm of government, the Division of Forestry may engage only in those activities which have been authorized by the Legislature. Most of these grants of authority may be found in the Public Resources Code, Statutes of California.

Since the prevention and control of wild fire was the most obvious and mandatory need upon the forest and watershed lands of California it is natural that regulatory fire laws and the direct interest of State government in the problem should have developed first and most intensively in that direction. The need and the effort have increased with the growing population and the increasing value of land and inflammable resources throughout the State.

About 1920 the Board of Forestry was permitted to establish a nursery for growing and selling shade and ornamental trees for public planting. Twenty years later the planting stock could be sold for actual forest planting on private land, including plantations for windbreaks and the prevention of soil erosion.

At the close of the Second World War, laws were enacted which made possible the acquisition of land by the State to be held and managed as State Forests. These Forests were for demonstration and experimental purposes and for the incidental profit which might accrue through the sale of forest products harvested by prescribed methods.

In 1945 the Legislature provided for regulatory control of lumbering methods upon private land under rules largely instituted by official committees made up of the representatives of the forest industry itself. This particular law is known as the Forest Practice Act.

Permission for the Division to engage in cooperative experimentation and to furnish technical advice to land owners who wish to convert brush and woodland into livestock browse was recognized by statute and appropriation. This project is known as the Range Improvement Program.

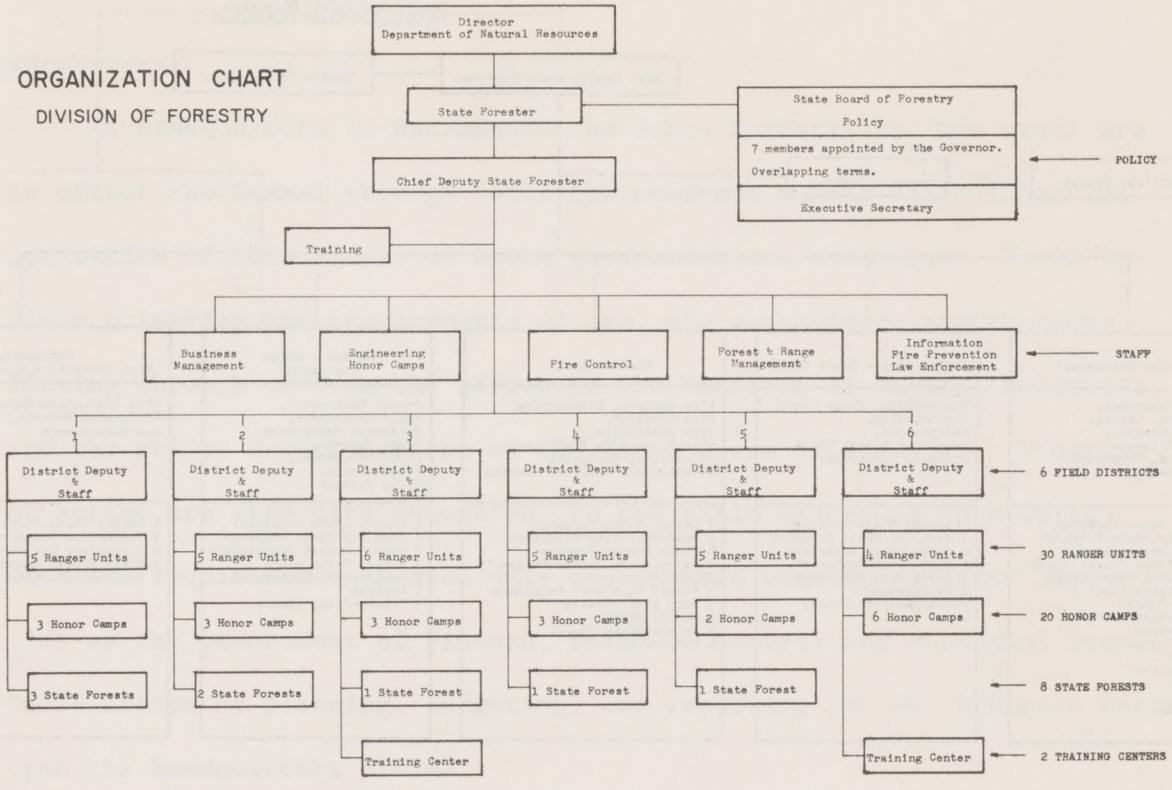
Technicians have been provided for and assigned throughout the State in what is termed the program of Service Forestry. In this program the numerous owners of small parcels of forest land may receive advice and observe practical demonstrations in respect to the profitible and conservative management and harvesting of their forest products.

In general it may be stated that the work of the Division of Forestry can be divided into two separate yet distinctly related phases: (1) forest fire prevention and suppression upon State and privately owned forest and watershed lands, and (2) forest and range resource use and improvement upon such lands.

A great deal of the Division's work is performed in cooperation with other government agencies or private parties. Sometimes, under properly approved agreements for reimbursement the Division uses its men and facilities to perform work upon lands not designated as its own primary area of direct responsibility. This will be observed in such matters as rural and winter fire protection by Division of Forestry firetrucks and crews.

ORGANIZATION OF THE DIVISION

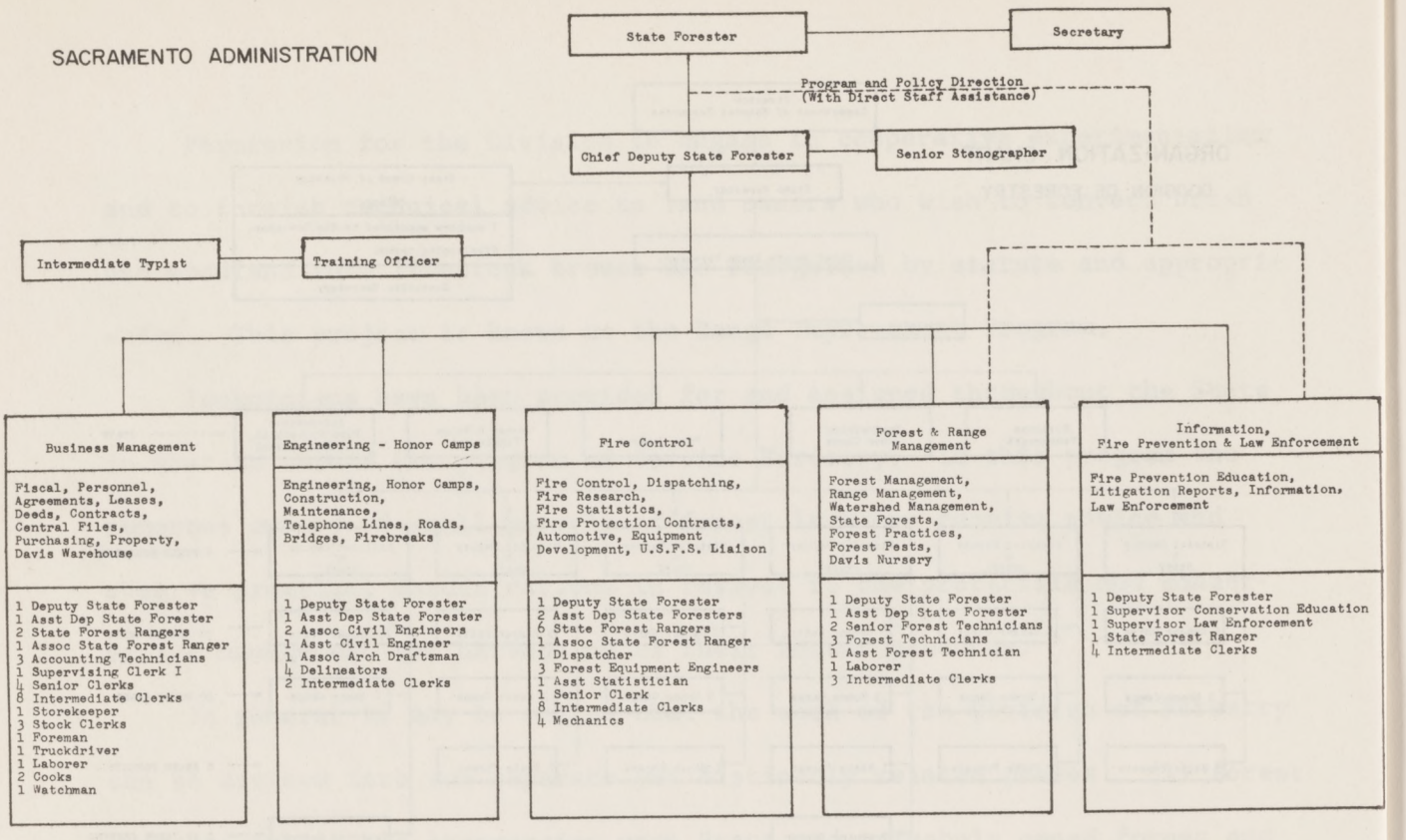
Most of the public service performed by the Division is out on the ground where trees, brush, grass and grain grow, where livestock and animals graze, where people live, work and play and where, unfortunately,



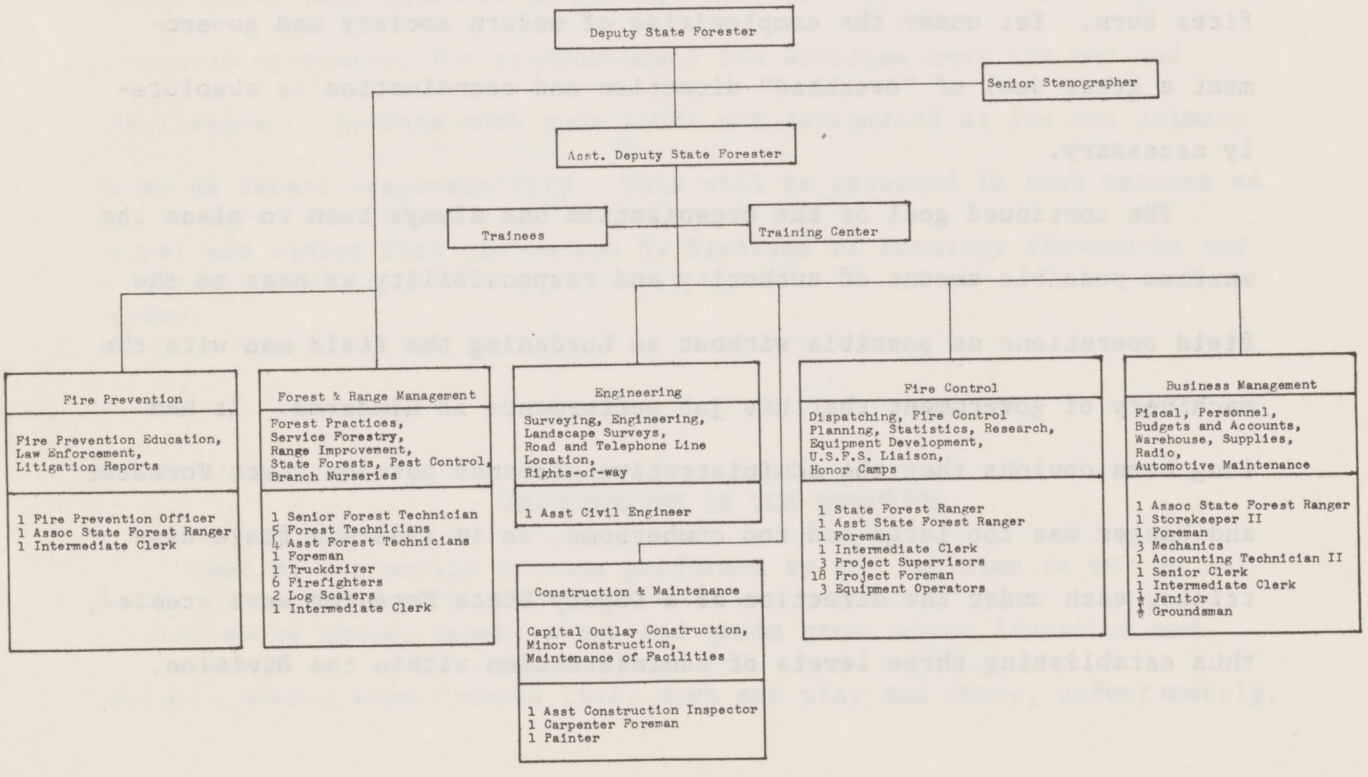
fires burn. Yet under the complexities of modern society and government a great deal of "overhead" direction and coordination is absolutely necessary.

The continued goal of the organization has always been to place the maximum possible amount of authority and responsibility as near to the field operations as possible without so burdening the field man with the machinery of government that his job performance is hindered. It had long been obvious that the administrative distance between State Forester and Ranger was too large and too cumbersome, so in 1943 six field districts, each under the direction of a Deputy State Forester were created, thus establishing three levels of administration within the Division.

SACRAMENTO ADMINISTRATION


State Forester
Secretary
Program and Policy Direction
(With Direct Staff Assistance)
Chief Deputy State Forester
Senior Stenographer
Intermediate Typist
Training Officer
Business Management
Fiscal, Personnel, Agreements, Leases, Deeds, Contracts, Central Files, Purchasing, Property, Davis Warehouse
1 Deputy State Forester
1 Asst Dep State Forester
2 State Forest Rangers
1 Assoc State Forest Ranger
3 Accounting Technicians
1 Supervising Clerk I
4 Senior Clerks
8 Intermediate Clerks
1 Storekeeper
3 Stock Clerks
1 Foreman
1 Truckdriver
1 Laborer
2 Cooks
1 Watchman
Engineering - Honor Camps
Engineering, Honor Camps, Construction, Maintenance, Telephone Lines, Roads, Bridges, Firebreaks
1 Deputy State Forester
1 Asst Dep State Forester
2 Assoc Civil Engineers
1 Asst Civil Engineer
1 Assoc Arch Draftsman
4 Delineators
2 Intermediate Clerks
Fire Control
Fire Control, Dispatching, Fire Research, Fire Statistics, Fire Protection Contracts, Automotive, Equipment Development, U.S.F.S. Liaison
1 Deputy State Forester
2 Asst Dep State Foresters
6 State Forest Rangers
1 Assoc State Forest Ranger
1 Dispatcher
3 Forest Equipment Engineers
1 Asst Statistician
1 Senior Clerk
8 Intermediate Clerks
4 Mechanics
Forest & Range Management
Forest Management, Range Management, Watershed Management, State Forests, Forest Practices, Forest Pests, Davis Nursery
1 Deputy State Forester
1 Asst Dep State Forester
2 Senior Forest Technicians
3 Forest Technicians
1 Asst Forest Technician
1 Laborer
3 Intermediate Clerks
Information, Fire Prevention & Law Enforcement
Fire Prevention Education, Litigation Reports, Information, Law Enforcement
1 Deputy State Forester
1 Supervisor Conservation Education
1 Supervisor Law Enforcement
1 State Forest Ranger
4 Intermediate Clerks

TYPICAL DISTRICT HEADQUARTERS



Headquarters

At headquarters in Sacramento the State Forester and his staff are in effect the funnel through which the numerous forces which shape the activities of this agency of State government are channeled. These include primarily the requirements of law, the supervisory instructions flowing through or from the office of the Director of Natural Resources, and the policy determinations of the State Board of Forestry. Programs of action are from here delegated to the field districts in keeping with the requirements of such duly constituted regulatory State agencies as the Department of Finance, Board of Control and Personnel Board. Coordination of planning, budgeting, and reporting for the Division rests upon the headquarters office.

Assisting the State Forester is his Chief Deputy who is primarily an executive officer and coordinator of staff functions. There are five functional offices in Sacramento, each under the supervision of a Deputy State Forester. Of these five, the two latter offices as listed below are essentially service units engaged in assisting all other functions and field districts as required. The staff Deputies represent:

1. Fire Control
2. Fire Prevention and Law Enforcement
3. Forest and Range Management
4. Business Management
5. Engineering and Honor Camps

The organization chart titled "Sacramento Administration" indicates the flow of authority and the number of personnel authorized for employment in Sacramento and at Davis Nursery and Davis Warehouse & Shops during 1957. In generalized groups the number is listed as follows:

State Forester and Deputies	7
Training Officer, Ass't Deputies and Supervisors	8

Rangers, Technicians, Civil and Equipment Engineers	23
Supervising Clerks and Statisticians	5
Draftsmen	5
Clerks, Storekeepers, Dispatchers	38
Mechanics and grounds personnel	11
	97

Districts

Each of the six administrative districts is supervised by a Deputy State Forester. He is supported by an Assistant Deputy and such technical and clerical staff as may be required to handle the particular type of forestry business of the district.

Headquarters for each respective district is located in the following city:

District I		Santa Rosa
II		Redding
III	(East)	Sacramento
IV		Fresno
V		Monterey
VI		Riverside

Specially designed buildings have been constructed at Santa Rosa, Redding, Sacramento and Riverside. The remaining two are in some process of development. Except in the case of Santa Rosa, some other agency of State government occupies the same office structure.

Other than its importance as a key administrative office for directing the agency functions, the district is a base geographic unit of operation, for four phases of Division work. These involve the Honor Camps; State Forests; public service of a technical nature, such as Range Improvement and Service Forestry; inspection of logging operations.

Throughout the district, wherever the intensity of business demands, resident supervisors or technicians reside and work. This would be true

in the case of the several Honor Camps and the large State Forests. Some Service Foresters are assigned to sub-divisions of districts.

Personnel attached directly to all of the six administrative districts are grouped as follows:

Deputy State Foresters	6
Ass't Deputies	6
Fire Prevention Officers	6
Ranger class specialists	28
Craftsmen and technicians	83
Dispatchers and clerks	73
Honor Camp Supervisors	19
Honor Camp Foremen and Equip. Operators	113
	334

Ranger Units

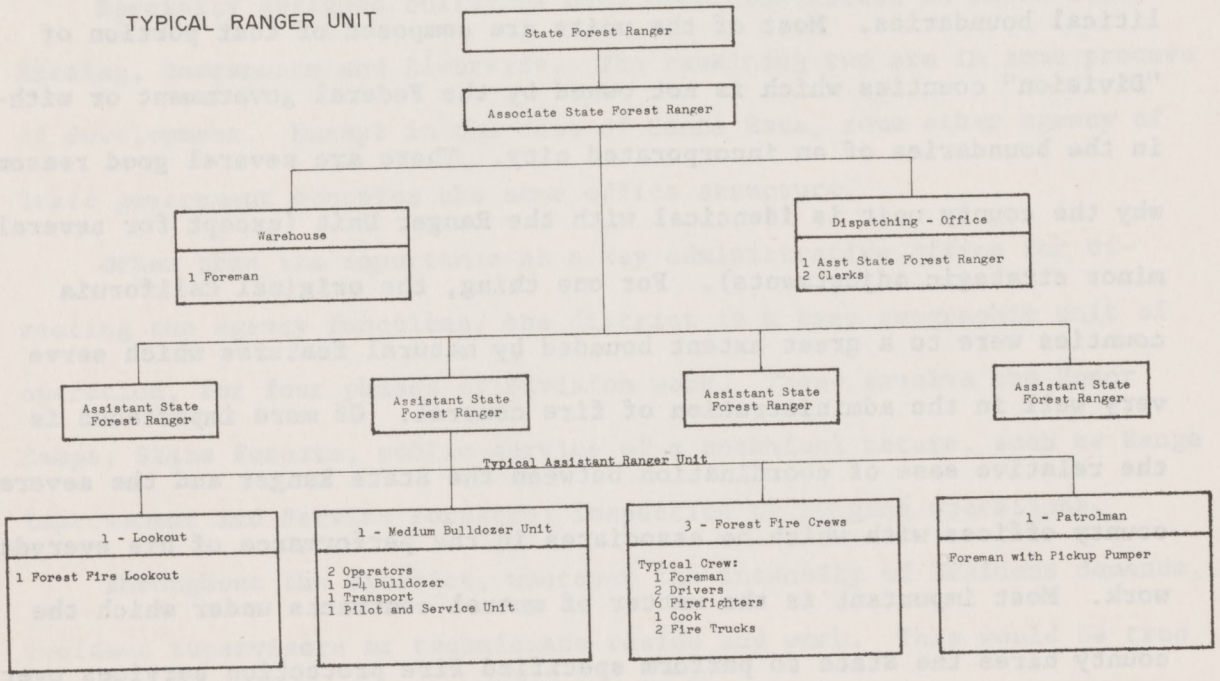
Each administrative district is composed of four to seven Ranger Units, there being 30 in total. These units are the basic operating and administrative areas of the Division. This is especially true for fire protection work. The matter of size, the number of units in a district, and the importance of the Ranger Unit is due to both geography and political boundaries. Most of the units are composed of that portion of "Division" counties which is not owned by the Federal government or within the boundaries of an incorporated city. There are several good reasons why the county unit is identical with the Ranger Unit (except for several minor strategic adjustments). For one thing, the original California counties were to a great extent bounded by natural features which serve very well in the administration of fire control. Of more importance is the relative ease of coordination between the State Ranger and the several county offices with which he associates in the performance of his everyday work. Most important is the matter of mutual contracts under which the county hires the State to perform specified fire protection services over and above the regular State effort.

Because of variable unit workloads, two Ranger grades have been established. The Ranger is assisted by one, and sometimes two, Associate Rangers and the number of Assistant Rangers deemed necessary to coordinate work throughout the Ranger Unit. From the unit headquarters all business of crew assignment, work supervision and fire dispatching is supervised. The total of employees assigned to the Ranger Units is listed as follows:

Rangers (in charge)	30	
Associate and Assistant Rangers	198	
Dispatchers and Clerks	86	
Craftsmen or Engineers	5	
Crew Foremen (and Patrolmen)	396	
Drivers and Equipment Operators	344	
Camp Cooks	28	
		1087
Seasonal employees		
Firefighters	1173	
Lookouts (inc. relief)	116	
Camp Cooks	178	
		1467

* * * * * *

Total Regular Division Employees	1518	
Seasonal Employees	1467	
	2985	(exc. Sched. A)



Castle Rock
Forest Fire
Station

Rural and Structural Protection

Since 1919 the State Forester has been legally authorized to enter agreements with practically all agencies or persons, public and private, to cooperate in fire protection projects. However, up until the early 1940's there was a serious lack of specification in two respects. These were: the designation of area of primary State responsibility, and the degree of State financial responsibility for fire protection. However, it should be noted that at that time the relatively limited State funds available to the Division made these questions largely academic.

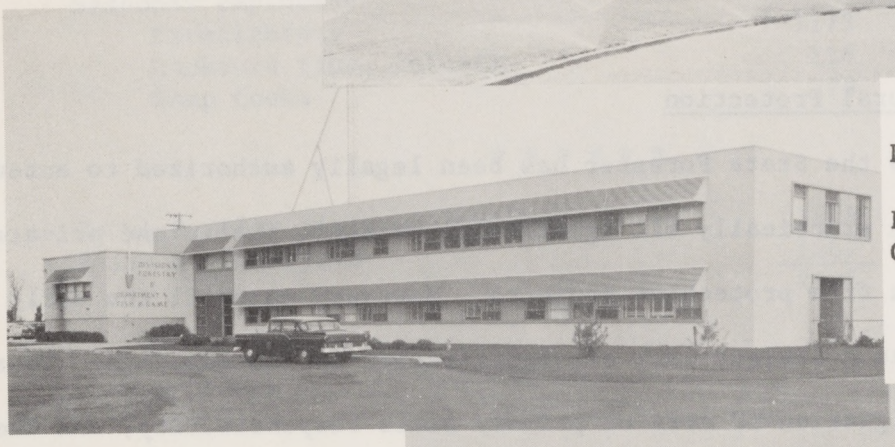
At the present time, with the State organization looked upon as a leader in forest fire control, it is quite necessary to set forth the field and extent of operations in which the Division may or shall engage.

As stated above, the Division is prepared and expected to take direct supervisory action in the prevention and suppression of forest and range fires within the designated State Interest Zone, except for those portions of that area protected directly by other agencies as agreed upon.

DISTRICT OFFICE BUILDINGS

District I,
Santa Rosa

District 2,
Redding



District 3,
Sacramento; with Dept. of Fish and Game

District 4,
Fresno. Under construction

District 6,
Riverside

Throughout the non-statewide interest lands, made up largely of agricultural areas, there is no legal justification for the maintenance of men and equipment for purely fire suppression business at State expense. And throughout the wet winter months the State has no obligation to attend structural fires wherever they may occur. However, in order to secure the several advantages of State directed fire protection for these non-State projects, twenty-five county boards of supervisors have entered very specific agreements with the State Forester. Thereunder, just such men and facilities are provided as the county wishes to contract and pay for. No actual profit accrues to the State under this cooperative arrangement. Tradition, if not specific law, developed throughout the many years when the county treasuries bore most of the fire protection burden, causes State officials to regard rural and structural fire protection as a perfectly proper field of Division contractual activity. This work is clearly authorized by present statutes.

The total reimbursement payment to the State represented by these extra contracted services amounted to $2,066,421 for the fiscal year 1957-58.

Most of this service occurs in rural areas of non-State Interest communities. Wherever structural facilities, such as firehouses, are built strictly for what has come to be called "Schedule A" or contract service, the local community makes the necessary expenditure in order to preclude any question of ownership or maintenance obligation. In most cases counties or fire districts hiring the State to perform firefighting services also own the necessary motorized or other special equipment. When State equipment is used a rental payment is made.

On the whole this contract service for counties or other agencies has worked quite harmoniously chiefly because it is operated only to the degree desired by the county and at a cost as nearly equal to actual cost as can be computed. It also relieves local government of many irritating problems in management.

The administrative effort involved in Schedule A work was first handled as part of the regular duty of most all supervisory personnel. As the load increased it was often necessary to request the addition of clerks and sometimes Assistant Rangers to concentrate upon the rural and winter structural fire business. In July 1957 a Ranger was assigned to the staff of the Fire Control Officer in Sacramento to coordinate all of this special county fire protection work and to serve as liaison officer with the counties protecting statewide values.

Although the Division budget does not reflect the dimensions of the work performed under Schedule A contracts it should not be forgotten that this is a two million dollar job extending throughout the State during the entire year. Many of the employees used on this type of work are hired and assigned to it on what might be termed a permanent basis. On the other hand, the Division's size permits a flexibility in shifting men and temporary relief employees from any source into posts which must be filled. It is obvious that a small independent organization would not enjoy such an advantage.

In the total of Schedule A contracts the Division provides for the following force:

yearlong stations operated	120
additional seasonal stations operated	58
yearlong firetrucks manned	168

additional seasonal firetrucks	53
number of yearlong personnel	313
extra seasonal personnel	134

Division Fire Protection Force; Men and Facilities

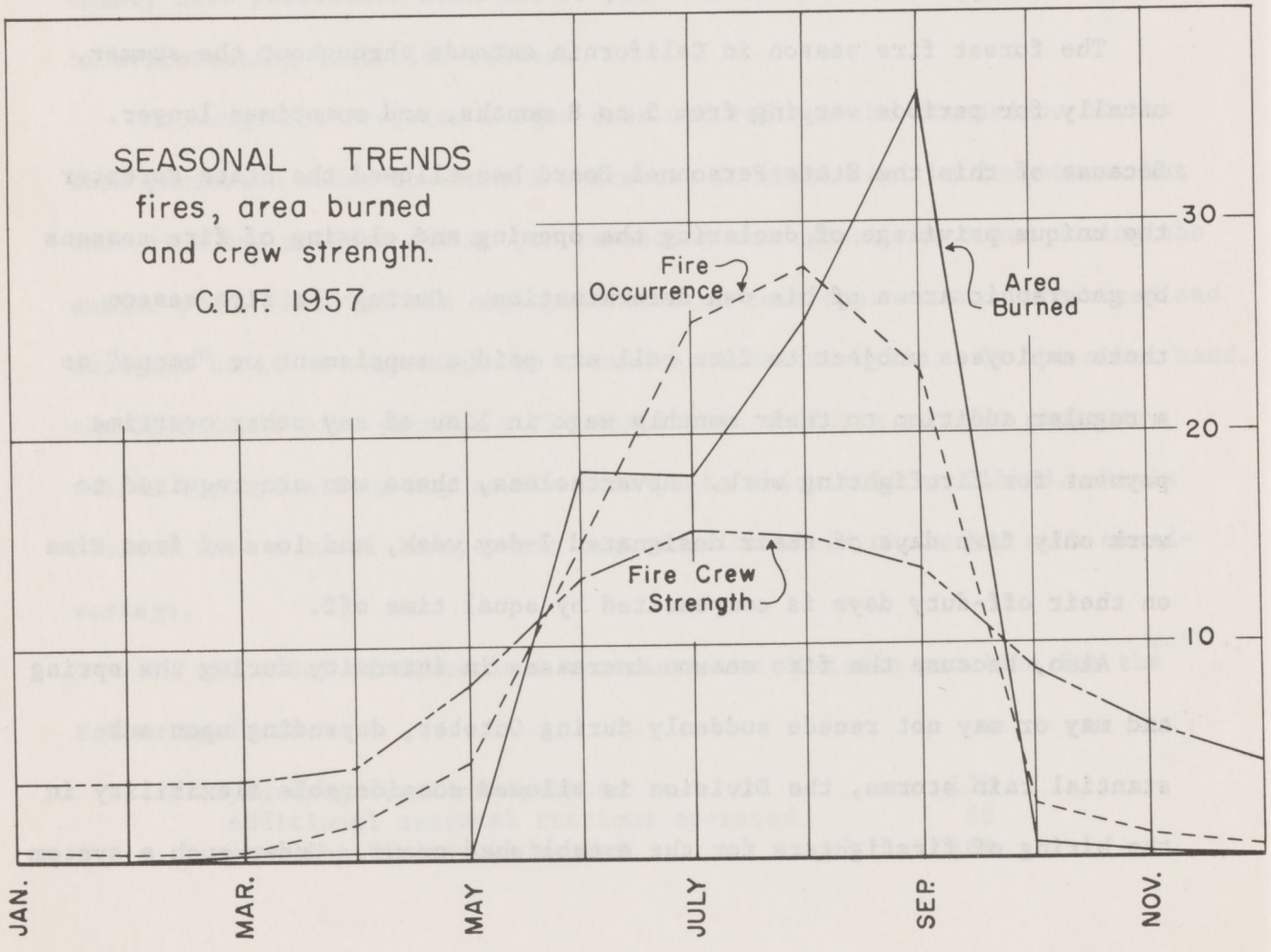
For the statewide interest lands protected directly by the Division there are established 229 fire suppression crews (other than Honor Camp and Schedule A crews). These crews are of 5 different size classes which are not easily explained because of the relief factor and the necessary substitution of foreman and driver duties in the absence of one or the other. It is enough to regard these crews as consisting of either 4, 9 or 13 men ready for immediate response to a fire call, each crew equipped with a water-carrying pumper truck adapted to the location and size of crew, and supplied with all necessary hand tools.

The forest fire season in California extends throughout the summer, usually for periods varying from 5 to 8 months, and sometimes longer. Because of this the State Personnel Board has allowed the State Forester the unique privilege of declaring the opening and closing of fire seasons by geographic areas of his own determination. During the fire season those employees subject to fire call are paid a supplement or "bonus" as a regular addition to their monthly wage in lieu of any other overtime payment for firefighting work. Nevertheless, these men are required to work only five days of their designated 7-day week, and loss of free time on their off-duty days is compensated by equal time off.

Also, because the fire season increases in intensity during the spring and may or may not recede suddenly during October, depending upon substantial rain storms, the Division is allowed considerable flexibility in the hiring of firefighters for the established crews. Under such a system

the actual control of wage expenditures is through allotted man-months of employment to each district rather than full firefighter strength of 1173 men quoted above. Each District Deputy State Forester is then obliged to hire and release men in the manner he determines will best meet his particular need. Of course, the "allotment ceiling" of man-months and the actual hiring trend will differ considerably between the North Coast and the Southern California districts. The chart below was included in this publication to indicate the marked effect of seasonal changes upon fire control operations.

Thirty-four fire prevention patrolmen were hired in 1957 to work in areas of special hazard, usually where a personal contact with a non-resident as well as resident population is believed profitable. Seventy-



nine lookout stations were manned by the Division, and two intermittent air patrols were utilized in lieu of fixed lookouts in rough terrain of low fire incidence. In addition, the Division furnished observers in two lumber industry regular air patrols in the redwood region.

A very important and valuable fire control element is the strength of some 1400 able bodied men and youths in the Department of Corrections and Youth Authority Honor Camps operated cooperatively with the Division. That force will be described below.

Basic Elements of Fire Suppression

The primary elements of efficient fire control are very simple and very important. They are: (1) discover the origin of the fire as soon after its start as possible, (2) tell the proper responsible agent about it at once, and (3) place adequate suppression forces at the scene of the fire within the shortest possible time.

To determine the practicability of any plan of operations developed to meet these requirements the planner must constantly weigh several sets of factors. Among these are: the value of exposed inflammable wealth; the risk of fires starting and spreading; the money resources available to build a fire control force; the need to choose among several fire control tools or facilities which may be available. Planning is a never-ending problem because the ground rules are constantly changing.

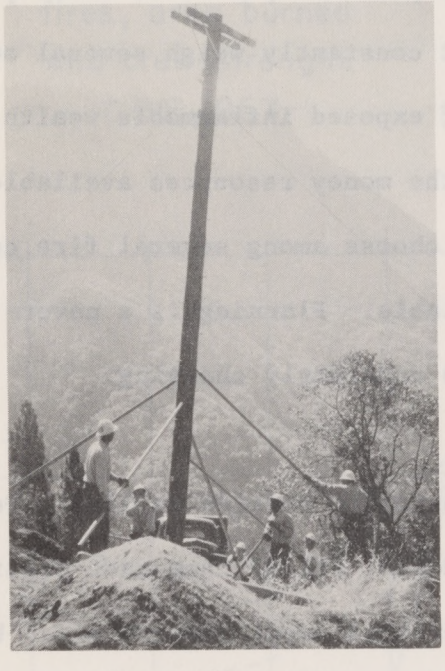
Fire Detection

The Division built its first fire observation station in 1921. Ten years later the State could boast about a dozen, all of them made possible only through the heavy contribution of interested local cooperators. Under the Civilian Conservation Corps program it became possible to plan scientifically for integrated statewide fire detection among all agencies.

Under the same program it was possible to construct by the year 1937 a total of 56 Division of Forestry fixed lookout stations. In 1957, seventy-nine stations were manned by the Division.

In August, 1955, a study was made in the use of a closed television circuit for fire detection at Mt. Danaher, El Dorado County. A private electronics corporation was kind enough to furnish necessary equipment and technicians for the project. At the conclusion of the experiment it was determined that with some concentration on techniques this method of scanning the field of visibility in search of rising smoke would indeed be feasible. At present it appears that the cost of operation of television would exceed that of personal observation.

Oregon Peak, Yuba Co.
Lookout and radio
repeater facilities



Honor Camp men
constructing Division power
line. Mtn. Home Forest

In recent years, two conditions have come to reduce the high primary value of

fixed lookouts. First, there is increasing response from the general public in reporting fires, because (1) there are more residents scattered throughout the wildland, and (2) there are more communications facilities, and (3) there is much more fire consciousness among the citizenry. Secondly, there is a decided reduction in actual visability around many lookout stations because of increased atmospheric haze due to the increase of human occupation and industrial establishments.

On the other hand, the population increase and subsequent increase in land use, causes an increased need for more concentrated fire detection, expecially in the more rugged forested land. Statistics vary strongly in specific areas, yet it is possible to say in respect to the Division as a whole that "first reports" from lookout stations have dropped approximately 25 percent in the course of a twenty year period. Nevertheless, in 1957, 22 percent of all forest and watershed fires were first reported by the Division's lookouts. And other lookouts, principally U. S. Forest Service, have contributed first reports for 5.7 percent of such fires. It can be stated as a safe generality that the particular fires reported from lookouts were more dangerous than the same number of "average" fires elsewhere, because of their place of origin.

Communication

Rapid and dependable communication is the key to successful fire control. With the great contribution of the CCC camps the Division could boast of 2000 miles of its own telephone lines twenty years ago. In 1957 the total throughout the State was recorded as 2184 miles. The Division is not in competition with commercial telephone companies. In fact, the cooperative relationship and mutual use of pole facilities is both congenial

and extensive. Such lines as the Division owns and operates are necessary links in its fire communication system.

The use of radio has grown prodigiously in 20 years. The Annual Report of 1937 states that although the F.C.C. had granted the Division "wave lengths of high frequency for field work, as yet we have been unable to afford a great deal of equipment." This was still the day when a few radio "hams" among the Rangers were proving on their own that this type of communication was an invaluable tool in the unpredictable business of fire control.

It has been claimed by outside observers that the radio facilities and territory of operation of the California Division of Forestry in 1957 exceed those of any other single agency outside of the big Federal networks. At any rate, in the way of equipment the Division uses 48 base stations, 48 mobile relays, 7 mobile land units, 199 portables, 1008 mobile units, 566 handi-talkies, and 34 remote control installations. Each of the six districts is using isolated frequencies. There is also a statewide network for use on border fires or on equipment dispatched away from its base frequency. Currently, the organization is in process of changing over to several operating frequencies all within the 150-170 MC band.

To supply electric power for relay stations it has sometimes been necessary for the Division to build power lines. When any portion of such lines can be disposed of to power companies they are sold. The Division now owns 13 miles of electric power line.

In addition to the radio equipment listed above, Division personnel operate 200 units on radio equipped vehicles owned by several counties wherein the State handles fire protection on behalf of the county.

Roads and Firebreaks

The Division maintains 3385 miles of fire access and administrative roads throughout the State of which more than 700 miles are maintained as "motorized" firebreaks. Most of these roadways are situated upon private land whereon the owners have granted free privilege use for official fire protection business. In addition there are, of course, hundreds of miles of plowed firebreaks beside roadways and agricultural land which are constructed generally in cooperation with local landowners.

Currently there is in process an investigation and study called "Road, Trail and Firebreak Inventory and Plan." While field work is under way on this project there will also be entered into the record all water storage facilities available to fire equipment and also potential "heli-spots" in rough terrain where future landings may be made from the air.

Dispatching

Wildfire like warfare tends to breed confusion and then feed upon it. To reduce the confusion and eliminate its cause at the earliest moment by suppressing the fire, a carefully studied prearrangement of attack plans have developed under the term dispatching.

The Division can expect to be called upon to suppress each year about 2200 forest fires, plus or minus 400. That is quite a variable that must be provided for, to say little of the five or six thousand structural and rural grass and grain fires which are also the responsibility of the Division under contract.

It has already been pointed out that the length of the fire season may be predicted only in its broad seasonal trend for each of the six geographic regions represented by the Division districts. The periodic intensity of

burning conditions in any one or more districts as the season progresses is subject to prognostication only for a few days in advance. The Fire Danger Rating scheme which attempts to accomplish this will be discussed shortly.

In the meantime, it is important to recognize that the core of the fire control problem lies in planning and establishing an organization which will meet "basic protection" needs. Such a need calls for men and facilities on the ground, so placed that the majority of anticipated fire strikes can be reached and suppressed before they sweep to conflagration proportions. Yet such an organization must be so efficiently constituted that its employment can be fiscally justified. Intensive planning to prepare for such an organization was undertaken by the Division in the years 1938, 1940, 1950 and 1956. This is not to say that the process ever ceases in respect to specific areas or projects. The dates mentioned were years of long range statewide Fire Plan Revision for the Division of Forestry.

The science of fire dispatching consists essentially of two phases, that of getting the nearest available attack force to the scene of every uncontrolled fire in the shortest reasonable time, and secondly, to follow up the initial forces with whatever strength is necessary to secure prompt control of the fire, without at the same time weakening the normal functioning strength of any part of the remaining organization beyond the danger point. Herein lies the advantage of statewide fire control resources under the immediate command of the State Forester, and herein lies the advantage of mutual aid agreements among the several fire protection agencies whereby forces may be loaned or rented one to another under ex-

press terms of understanding agreed upon before the fire strikes.

The mechanical dispatching control under which the Division operates is simple because it must be to eliminate all possible confusion. To the basic dispatching level in the Ranger's office all fires are reported and first attack forces are sent to begin suppression work without delay. The ranking employee immediately becomes the all-important Fire Boss of the particular fire until he is relieved of that responsibility by superior authority. Whenever any fire reaches 100 acres in extent, or whenever a certain percentage of the Ranger's forces are engaged, or when a specified number of fires are burning uncontrolled within the Ranger Unit, then the District dispatcher is notified of the prevailing situation. Thereafter, as ordered by the District office, forces may be dispatched from any part of the District as deemed necessary.

Whenever any fire reaches proportions of 500 acres, or when 50 percent of a District's facilities are engaged, or when specific appeals are made for assistance from outside the District, then the District dispatcher must make a clear report to the central dispatcher in Sacramento. Inter-district dispatching and most contacts with headquarters offices of the Federal Forest Service, military bases, State prisons and the like, are made from Sacramento.

Fire Index Rating

For more than forty years foresters and meteorologists have puzzled and worked over the solution to what certainly must be the most important and most fundamental question in the business of wildland fire control. The question can be stated thus: If any of the several types of fuel material out there on the ground is ignited now, what will be the result in

the intensity of fire, and what will the situation be during the ensuing hours of the battle for control of the fire?

There was never any doubt but that recent past weather, as it existed right around the live or dead plant material, had caused it to possess a certain amount of moisture, and there was no question but that the moisture in the air and the amount of wind movement were of vital importance once the material became ignited. The only serious obstacles to gaining a workable solution for the firefighter were the vast areas and complexities of the invlammable materials and the cost and technical difficulties in obtaining refined and minute weather forecasts.

Heavy Conventional Forest Firetruck; carries 500 gallons of water, a 250 gpm aux. driven pump, a crew of 4 men. The Division operates 32 of this type.

About 1940 the U. S. Forest Service had developed a Fire Danger Rating System which was incorporated into Division of Forestry operations. This system went to the heart of the problem and secured only two pieces of key evidence (as such existed at key "average" stations where the recording instruments were housed). The information secured was wind movement and moisture content of a carefully standardized piece of pine sapwood which was kept exposed to all weather. Moisture content was obtained in percent simply by weighing the stick at regular intervals. There was nothing wrong with the result except that it solved less than half of the unknown question

In 1955 the California Forest and Range Experiment Station in cooperation with the Division, the Forest Service and the Weather Bureau began to concentrate on a refinement and extension of the study. Fuels have been segregated into three classes, fine, medium and heavy, and also recorded as to moisture content due to sap content in live fuels. Geographic areas used as reporting units are small enough to be consistent in both climate and predominant type of vegetation. Weather forecasting is more localized. The resultant object is the creation of what is termed the Burning Index for each delineated area. This is translated into a forecast of two practical terms for the area, namely, for a stated time it may be expected that (1) a fire will develop in perimeter (spread) at a stated speed, and (2) it will burn at a stated intensity, which might be expressed in terms of width of fireline required to confine the fire.

This hopeful study appears to offer much of practical value at the present date. Research and analysis will continue with the assistance of all of the wildland fire control agencies during the coming years. In the field of forest fire dispatching the tremendous value of this danger rating forecasting should be self-evident.

Santana Task Force

Rarely does a late fall season pass in Southern California without a period of strong, dry winds blowing westward from the desert. These winds are called the Santa Ana or santana. Devastating fires in the valuable watersheds may be anticipated during this time. Although assistance from the north has been made available for a number of years, the first calculated movement of men and facilities upon the relaxation of the northern

fire season was made in 1957. The project was known as the Santana Task Force. On October 29, 70 men and 55 pieces of motorized firefighting equipment were selected from the combined northern Districts and transferred into several base crews in District 6. Arrangements were also made for enough northern relief personnel to keep this complement full. By November 5 it appeared that early rainfall might have reduced the usual high fire hazard in the South and the men were withdrawn, leaving the equipment. By the 22nd they were returned after violent winds of 70-80 mile velocity began to blow. Several potential holocausts were promptly subdued, but not the Gale Fire on the Angeles National Forest. This 25,000 acre fire burned very valuable watershed above Monrovia and the flood result could yet be disastrous for the settled area of that vicinity.

Reseeding Burned Area

The State has spent many millions of dollars in an effort to prevent the devastation of watershed vegetation by wild fire. Prior to 1957 there have been a very few instances in which it was deemed proper to join with other government agencies in emergency seeding or tree planting upon burned watersheds in order to prevent possible soil and debris washing which could be anticipated with the arrival of heavy rainfall. For many years it has been permissible under law to engage in this type of work, and in 1957 the law was made precisely clear as to the public interest in such projects. Division policy requires that such projects be a matter of urgency, of a size and nature presaging widespread potential damage, holding forth reasonable success for rapid plant growth, and supported by local interest to the extent of a sharing at least half the cost.

Boy Scouts of Ben Lomond planting grass seed on recently burned area to prevent soil erosion.

During 1957 the Division cooperated in the revegetation of seven burned areas involving 25,606 acres. Several species of seeds weighing more than 77 tons were sown. The sum invested by the State in the work was about $10,000. Seeded areas are being observed carefully as to results.

Small Watersheds Act

A natural child of the extensive soil conservation projects initiated in the Roosevelt administration was Public Law 46 of 1935. Then came PL 566 of 1954 generally called the Small Watersheds Act. Under this law, and local enabling legislation, provision is made for the cooperative entry of practically all interested persons and groups into the building of dams and the subsequent integrated development and use of watersheds. Projects under this act are limited in size of watershed and size of dams.

Whenever fire protection or reforestation becomes a matter of interest on any privately owned lands within the watershed boundaries then the Division of Forestry becomes involved as the representative of the U. S. Secretary of Agriculture, through the Forest Service. Although the State has not become heavily involved financially in the furtherance of these

projects, the public interest displayed and the necessity of taking an active part in a rather complicated pioneering work has made it necessary for the Division to assign one full time qualified employee to represent the organization. Eight small watershed projects were being developed during 1957 in California.

FIRE PREVENTION

From the beginning of the State entry into forest fire prevention work nearly 75 years ago the place of law enforcement was prominent. Up to about 1950 several law enforcement specialists were employed, but at that time State Forester Nelson reorganized this particular function so that much more effort was put into public education to prevent the occurrence of fires, and at the same time concentrate upon the ever-present and growing public relations duties that press upon all government forest agencies. The importance of educational

contacts with every phase of American life had never been undervalued by the Division. There simply had heretofore been no organizational provision for making it the primary duty of a few specialized personnel to supervise the program and to assist and instruct practically all of the remaining personnel in the art of making the whole citizenry wish to be a part of the wildland conservation effort.

Cooperation is the key word. It starts among all of the government agencies and the associations organized specifically to accomplish conservation work and then enlists the support of public spirited citizens and groups. Annually the California Fire Prevention Committee representing 450 industries and organizations meets in the spring and renews its faith and energies for the job of spreading the gospel of natural resource conservation. Invaluable contributions are made by the professional advertising and entertainment agencies, newspapers, radio and television producers. During 1957 personal contacts in the visual type of education reached hundreds of thousands of children and adults, and written items for newspapers, window displays, leaflets, stickers and so forth reached literally millions of persons. Nearly 3000 group contacts were made with and without special movie films.

In 1950 the Division produced a so-called documentary movie called "Campaign Fire" with a Hollywood professional taking care of all directing, camera work and processing of film. The 16mm. black and white, sound film is a 34 minute run. The 10 copies owned by the Division are constantly in use, and many have been distributed throughout the nation.

In 1957 the film "Careless Crime" was made for a 13 minute run. The Division uses 24 copies, while other States and Canada have secured about

100 of the films. Also in 1957, a 15 minute film called "Caught in the Act" was produced and 35 copies made for the Division alone. In addition, many movie trailers of about 33 seconds have been distributed to public theatres and also TV "spots" and featurettes of 8 seconds to 5 minutes duration.

Closer to what might be termed pre-law enforcement, 48,300 personal contacts were made by Division personnel on patrol during 1957. 101,379 regular burning permits were issued and 479 special range improvement permits. Other than 3579 lumber operations inspections provided for under the Forest Practice Act, there were 16,510 individual inspections made of public dumps, recreation areas, mechanical equipment, mountain cabins and so forth.

Under the heading of cooperative right-of-way hazard reduction there was accomplished about 1900 miles of State and County highway discing, burning or other treatment. 128 miles of railroad right-of-way was fire-proofed.

Statistics indicate that of fires attended by the Division, 31 percent originate along roadsides, 6½ percent along railroads, 39 percent in wildland, 3 1/3 percent in lumber operation areas. The smoker has long been the individual villian, causing about 40 percent of all fires, while debris burning causes 12 percent and deliberate incendiaries a rather disgraceful 15 percent.

Nearly 2000 investigations were made of fire causes in 1957. From these there resulted 165 criminal and 205 civil cases in court.

In the approved Division budget effective July 1, 1957, funds were included for a new position called Law Enforcement Coordinator. However,

no appointment will be made until a regular candidate is approved by civil service examination in mid-1958. This official will be responsible for supervising investigations pertaining to the enforcement of forest and fire regulations and laws and for the preparation of reports and evidence preliminary to law enforcement procedure and for similar work involving the coordination of law enforcement and fire prevention effort within the Division.

Fire Statistics, 1957

AREA PROTECTED - Acres

Protected by:

Division of Forestry		
Clarke-McNary Zone		12,945,787
Other State Interest land		10,391,982
	(a)	23,337,769
Contract Counties (Los Angeles, Ventura, Santa Barbara, Kern, San Mateo, Marin)		
Clarke-McNary Zone		1,863,760
Other State Interest land		1,346,964
		3,210,724
U. S. Forest Service (C-M Zone)		5,245,649
U. S. Nat. Park Service (C-M Zone)		5,199

Summary of all State Interest lands (i.e. forest and watershed zone of State and private ownership) = 31,799,341 acres

* * * * *

Federal land within statewide interest area protected by Division of Forestry.

National Forest		383,437
Public Domain		1,694,375
Bur. Land Manag. (Grazing)		690,000
"Indian" lands		267,295
Other		555,000
	(b)	3,590,107

* * * * *

Rural (non-State Interest) land protected by Division of Forestry

	(c)	9,740,000

* * * * *

Summary of all lands protected directly by Division of Forestry (a), (b), (c) above 36,667,876 acres

NUMBER OF FIRES - AREA BURNED

Forest Fires* on land protected by

	No. Fires	Area Burned	Material Damage**
Division	1986	124,316	547,181
Contract Counties	450	16,087	112,528
U. S. F. S.	387	9,408	580,263
Nat. Park Ser.	2	-	-
	2825	149,811	$1,239,972

Structural fires attended by Division

	No.	Damage
Forest and watershed land	352	$2,232,307
Non-State Interest area	1182	4,651,680
		$6,883,987

* Fires originating in vegetation in State Interest Zone and structural fires on such lands burning more than 1/4 acre of vegetation.

** Includes old and young timber, improvements, forage, agricultural produce but not watershed, recreation and similar abstract values.

HONOR CAMPS

The idea of utilizing the idle manpower wasted in prisons for such noncompetitive labor as fighting forest fires and protecting the public interest in the natural resources had long been contemplated. Throughout the years, during times of extreme fire emergency it was not uncommon for fire wardens to supervise jail or prison crews for short periods of fire line labor. However, it was not until about 1940 that the idea of inmate rehabilitation as an important end in itself welded the custodial and natural resource agencies into a labor camp program which can presently be viewed with great pride by the people of California.

Youth Authority wards returning from the fire line. All such work projects are supervised by Division personnel.

High Rock CDC Honor Camp in Humboldt County. Construction finished in late 1957.

This was not an easy thing to accomplish for numerous small reasons having their source in the fact that each agency of government is established by philosophy, law and financing to perform a certain rigidly specified type of service. The working of convicted prisoners and youthful wards of the courts in the great outdoors under the supervision of sometimes harried forestry personnel required much in the way of mutual understanding and compromise. To these small problems there was added more often than not the necessity of removing by good example the preliminary hostility on the part of residents in the vicinity of proposed camp projects.

The average person, having little acquaintance with the aims of the honor camp program, is inclined to think that every inmate is possessed by the thought of running away at the first opportunity. On the contrary, the selected camp inmates know, whether or not they could express it in words, that when they walk past the marker at the camp boundary without authority they are in fact admitting their own immature incapacity to live in the normal world of respectable society. They rarely walk away.

The whole honor camp program as it existed in California at the end of 1956 with its hopes for the future may be read in great detail in the official publication, Study on Prison Labor and Forestry Camps, a Report of the Senate Interim Committee on Natural Resources in response to Senate Resolution 162 of 1955.

In 1957 there were in operation 12 prison honor camps operated jointly by the Department of Corrections and Division of Forestry. 705 inmates were in camp although 25 were later added to the normal 60 at Parlin Fork Camp, largely to test the highest feasible camp population under prevailing living and working conditions.

In three Youth Authority forestry camps, and three secondary or subsidiary "spike" camps, there were housed a total of 265 youthful wards. Since the young offenders in the CYA camps are definitely not convicted prisoners, the matter of guidance and rehabilitation takes precedence over all else in the camp operation and naturally requires the closest working harmony between the supervisory and custodial personnel in charge of every phase of camp life.

The potential work load available for these camp inmates is practically unlimited, although the matter of its accessibility to the various camps is another matter. Except for emergency fire camps it is practically mandatory that crews spend the night at regularly established bases. Firefighting is the most important and the most valuable contribution made by the workers and they must be commended for the skill and willingness with which they approach the weary toil.

Fire prevention work occupies next place on the work program. This consists of road, trail, firebreak and telephone construction and maintenance, elimination of hazardous vegetation, cleaning up around recreation areas in State Parks, etc.

In the field of forestry such work as the following is accomplished by Honor Camp inmates. Three nurseries for forest planting are operated, at Ben Lomond CYA Camp, at Parlin Fork and at Magalia CDC camps. Cones are gathered for seed, and seedlings are planted. Currant and gooseberry bushes are destroyed because they are host plants of destructive white pine blister rust, insect infested trees are felled and destroyed.

Because it offers economy in prison operation, because it accomplishes great quantities of valuable conservation work at economical cost

and much that would not possibly be accomplished otherwise, and most of all because it produces an inestimable good in human rehabilitation, the forestry Honor Camp program will certainly long occupy a respected place of California State government.

FOREST AND RANGELAND MANAGEMENT

When pioneers enter a virgin land it is entirely to be expected that they will wastefully exploit any plentiful natural resource and even destroy that which appears to be a nuisance at the time. The wholesale clearing by fire of Eastern forests by the homesteaders is a well known episode. Such a practice was not duplicated in California, undoubtedly because lumber had always been a valuable commodity.

Of course, there was wasteful exploitation as judged by current standards and, of course, there were countless hours of toil devoted to attempted conversion into farms of land better adapted to range or forest. Nevertheless, California was settled late enough among the States so that many influential citizens were aware of the permanent economic losses that could beset the State unless some degree of protection and wise use were instigated upon the forest and watersheds. Perhaps that is why California, among the Western States, was least antagonistic toward the creation of National Forest Reserves at the turn of the century.

It is somewhat paradoxical, therefore, that State government responded so slowly to entering either the field of wildland fire protection or into what might be broadly termed wildland management.

The establishment of State fire protection after the First World War has been described. Other forestry projects had often been discussed

and proposed by the Board of Forestry. It might be said in general that these proposals began to enjoy reality at the close of the Second World War. They are described below

State Forests

By the early 1920's it was mutually understood by the lumber industry and the Board of Forestry that the best practical way of seeing cut-over timber lands regenerate another crop of lumber was under the control of the State as State Forests. The hurdles of long term financing, unsolved biological and silvicultural problems of reforestation, and above all, the continuous hazard of fire destruction were all deterrents to private reforestation and permanence in an industry which has often suffered in market fluctuations.

With the 1926 amendment to the State constitution providing for exemption from property taxation on growing timber and after some substantial progress on the part of State forest fire protection, the enthusiasm for establishing State Forests subsided. It arose again in the 1940's and culminated in authoritative law and appropriations in 1945 and 1946. The sum of $2,000,000 was made available for land acquisition in general, and the sums of $600,000 and $100,000 were appropriated for the purchase of Mountain Home Tract and Latour Forest respectively.

The names, location and size of presently existing State Forests are listed below. A portion of Mt. Zion and the three last named were gifts to the State from private doners.

Name	County	Acres
Jackson	Mendocino	52,040
Latour	Shasta	9,013
Mountain Home	Tulare	4,560

Boggs Mountain	Lake	3,433
Mt. Zion	Amador	164
Las Posadas	Napa	796
Ellen Pickett	Trinity	160
Loghry	Santa Clara	68

The law providing for the management of State Forests also provides that a sum equal to land taxes on similar surrounding land shall be paid into the treasury of the county in which the Forest is situated. Since this is done, all of the income from the sale of forest products is deposited in the State General Fund.

During 1957 there were sales of 26.7 million feet of timber in addition to 900 Christmas trees and other minor quantities of products. This brought in a total of $620,440. Since 1946 there have been 124 million feet of timber sold which has meant an income for the General Fund of nearly 2.2 million dollars. Fiscal accounting in government forestry can be quite complicated. In this case it is at least obvious that the original purchase appropriation has been returned to the State General Fund in the course of a dozen years.

Salvage sale of down redwood for shingle bolts on Mtn. Home State Forest. No large redwoods are felled for commercial use on this tract.

The Forests were acquired essentially to be research areas for every problem of forest land management. Economic use upon a sustained yield basis under various logging conditions is simply one phase of the broad management plan. One interesting timber sale on Jackson State Forest useful to the State and the Masonite Corporation of Ukiah was the latter's selective logging of a quarter-million feet of eucalyptus which had been planted in the 1920's as an experiment during a hopeful period of private redwood reforestation.

The availability of Honor Camp labor in the State Forests is a very fortunate situation in the conduct of numerous experiments, such as stream clearance, application of various methods of planting and thinning for different tree species, brush control, slash disposal, rodent control, ribes eradication, Christmas tree production, fire hazard reduction and nursery operation.

Public recreation is recognized as a proper State Forest use, and one which can hardly fail to increase with time. Thus far there has been little encouragement as a matter of policy to develop any intensive camper use. The care, entertainment and protection of (and against) large crowds of people is recognized as an expensive and specialized type of work for which the Division of Forestry is not well equipped. It is quite likely, however, that with the increase of population the Division will find itself forced to at least establish numerous fire-proofed camp grounds with reasonable standards of santitation and supervised use.

Forest Practice Regulations

More than half a century ago a few States endeavored to regulate by law the manner in which forest products were harvested upon private lands.

However, it was not until about 1940 that such controls were established pretty generally and with popular approval throughout the nation.

In California, definitely with the assistance of leaders in the industry, a Forest Practice Act was written into law in 1945. The law defined four major forest practice districts and provided for the appointment of members to respective committees in each district. Membership must represent specified qualifications of land ownership or industrial status. The committees are charged with the responsibility of proposing minimum rules designed to protect forest land and for harvesting in a manner that will ensure continued forest regeneration.

After a vote of approval by qualified forest land owners the prescribed rules are submitted to the Board of Forestry. Upon approval by that body the rules have the effect and force of law for the particular forest district. It is the duty of the State Forester to make inspection and take action to secure compliance with the rules.

Operators who intend to engage in commercial forest harvesting must secure a Permit to Operate from the State Forester, and landowners upon whose land harvesting will take place are required to notify the State Forester of the area of intended operations. In 1957, 1591 operators were issued permits; Division personnel made 2592 inspections upon 1510 different operating areas. Thirteen technicians are employed by the Division in this field work. They made about half of the inspections and the remainder were accomplished by other Division personnel.

In 453 cases notice of pending punitive action were issued to secure better compliance with the rules. Eighteen cases of alleged statutory law violations resulted in citations into court and 14 of them were sustained by the court.

It can be said that from the responsible industry people and from the public there has been an increasing demand for more rigid enforcement of the Act. This attitude was reflected in an amendment to the law in 1957 for the purpose of strengthening the position of the State in enforcement work. Also in 1957, the Board of Forestry requested the four district committees to review the rules and hold public hearings in the light of the amended law and then to transmit to the Board any proposed changes for its consideration.

Forest harvesting in its several forms is a large and vitally important industry in California. Furthermore, it has more than doubled in volume since the Forest Practice Act became law. There are more than 2400 wood product establishments in California, of which 695 are sawmills. Nearly 6 billion board feet were harvested in 1956. This record placed California second to Oregon in lumber operations. Within the State the consumption of lumber per capita has long exceeded that of any other part of the nation and no doubt the world.

Upon 8.1 million acres of privately owned forest land in California there are estimated to stand 166 billion board feet of timber. The importance of establishing the Forest Practice Act, and the size of the enforcement job are well indicated by the figures quoted above.

Service Forestry

Since the 1930's it has been recognized that soil conservation and forest conservation upon thousands of small land holdings were of vital importance to the continued prosperity of the nation. Several Federal laws based upon cooperative aid to accomplish good land management have been enacted since 1937. The most comprehensive in respect to the service

forestry project was the Cooperative Forest Management Act of 1950, through which incentive is provided to induce the States to maintain qualified advisors in the field on much the same status as agricultural advisors work among farmers.

As a matter of fact, about one-third of the 10,000 owners of small forest tracts (under 5000 acres) in California are principally interested in farming. These small ownerships in total represents approximately 5.8 million acres of forested land, an area almost the size of the State of New Hampshire. The importance of keeping such an acreage in profitable forest production is self-evident.

Nine Service Foresters are employed by the Division and located respectively at Fortuna, Willits, Santa Rosa, Redding, Oroville, Placerville, Sacramento, Monterey, Riverside. These technicians, upon request, meet with landowners to consult upon methods of harvesting and marketing the forest crop, the preparation of management plans, means to protect it from insect, disease and fire and to improve the production. The service is essentially advisory and it aims at informing small owners. Where large ownerships are involved or there are obvious chances for prompt and considerable profit, the owner is advised to obtain the professional service of any one of many well qualified forest consultants.

During 1957, the State received 1228 requests for assistance and gave service to 734 owners. Under the improved timber harvesting methods recommended there were 39.2 million feet of timber logged and about 16 million in addition in which marketing assistance was given. This represented a total income of more than $609,000 to the owners. Upon recommendation there were 809 acres planted to forest species. 1688 acres were treated

to improve the forest stand.

The diversity of this type of work obviously makes it mandatory that each Service Forester keep himself advised of the progress and status of every aspect of the forest industry which could effect the small woodland owners.

Forest Nurseries

Although the operation of forest nurseries was a principle activity of the "old" Board of Forestry from 1885 to 1893, there was actually nothing accomplished along this line by the State after that period until 1920. A tree nursery near Davis came into being largely because the State Highway Commission entered substantially into the project. The primary goal was the production of roadside shade trees. It was 1939 before the basic law was amended to allow the sale of trees to private parties for genuine forestry projects such as windbreaks, erosion control and lumber plantations. Prior to this, sales had been restricted to plantings for public purposes. In 1953 it became possible for the State Forester, with the approval of the Board of Forestry, to establish a selling price for planting stock for forestry purposes. Now as production mounts from about 60,000 trees in 1950 to some 3 million in the 1957-58 season, the income from sales more closely approaches production cost. The increased production was made possible by the installation of three nurseries between 1950 and 1953 at the Honor Camps as already mentioned.

It is estimated that there are 2.1 million acres of potential forest land, privately owned, in California which are not properly restocked. The hope of the Division is to counteract this increasing economic loss. Only a thousand or, at most, two thousand acres have been planted annually,

and that hardly offsets the annual deforestation. Here is no simple matter of providing planting stock and putting it in the ground. Since 1900 about a township has been planted to forest tree stock, not including Federal plantings. Only a third of the trees have remained alive, and about half of the area was in the moist redwood region. The climatic and biological difficulties confronting every artificial reforestation project in California are disheartening. Not only are the first hot, dry summers devastating to young seedlings, rodents, other animals and disease take a high toll. Nevertheless, the work proceeds and State nursery production will increase.

In 1957 the personnel of the Division made plantings of 95,200 trees on both administrative and State Forest sites. More than a quarter million trees were sold to the U. S. Forest Service to meet planting requirements in excess of their own nursery production. It is gratifying to observe that an increasing number of lumber operating companies are again entering the field of reforestation by planting, and apparently with considerable success.

In the four State nurseries there are employed five technicians, two laborers and some seasonal assistance. From the inmates of the three Honor Camps there was contributed 26,300 man-days of valuable assistance during the year.

Forest Pests

It is estimated that 1.3 billion board feet of timber in California with a stumpage value of about 20 million dollars is destroyed each year by forest insects. The 1957 loss was said to be some 2½ million feet greater. In addition there are numerous diseases and especially the

devastating white pine blister rust which destroys highly valuable sugar pine.

Little was done in early years by the State in the face of such overwhelming natural destruction. In 1923 a law was passed allowing the State Forester to abate insect nuisances at the expense of landowners, providing 60 percent of the owners in a declared zone petitioned to have the work done. This cumbersome law was amended in 1953 to permit the State to enter into insect and forest disease cooperative control projects. Generally the State pays no more than one-half of the cost of pest abatement work. Five such projects are currently in progress with an anticipated State expenditure of some $35,000.

Most insect control is accomplished by felling infested trees, utilizing large sound logs, and destroying small trees and debris in the woods. Thus far the Division has cooperated in one aerial spraying job. This was to control Douglas-fir tussock moth. On the other hand, aerial observation coupled with ground inspection to detect epidemic conditions is a common practice. In 1957 the Division furnished observers to fly over practically all of the pine and fir lands of California with Experiment Station entomologists during aerial surveys.

There are about 3 million acres of sugar pine timber throughout California. Blister rust has been preying upon it for 32 years. Since that time the State has expended nearly 2 million dollars in cooperative projects for the retardation of the disease. Currently the sum of $115,000 is budgeted for this purpose. Of the mentioned 3 million acres it has been determined that intensified control work is feasible on only 466,807 acres, about half of which is owned by the State and private parties with the remainder on Federal land.

For several years the job of coordinating and then reporting upon the several aspects of forest insects, disease, and animal pests has been in the hands of the California Forest Pest Control Action Council. This council is composed of representatives from 10 agencies, including State and Federal agencies concerned with forest land administration, the University, and the lumber industry. The Council's annual report titled Forest Pest Conditions in California 1957 consisting of 26 pages with illustrations has been compiled by the California Forest and Range Experiment Station and printed for distribution by the State Forester.

This field of work has been recognized by the State administration in 1958 to the extent of providing for employment of a full time technician on the State Forester's staff to concern himself exclusively with forest pest control.

Christmas Trees

Thirty years ago the Legislature took note of trespass upon mountain land in the gathering of Christmas or Red Berries and Christmas Trees. The State Forester's organization was named among law enforcement officers designated to prevent the taking of these greens without proper permission. For about a decade a number of State Rangers were employed prior to Christmas examining transportation trucks along highways.

Of late years the Extension Forester has gathered statistics upon the source and use of Christmas trees in California, and then he issues an annual report. The Division assists by making spot checks of sales and losses in the market place. The State Department of Agriculture reports upon shipments by truck through border stations.

In round figures, about 4¼ million Christmas trees are used in California and this represents about 11 percent of the national total. Only

10½ percent are natural trees grown in California and a small half percent are from local plantations.

Of the nearly 4 million trees coming into the State, about two-thirds come by rail. However, it is estimated that in 1957 truck imports dropped 20 percent from 1956, no doubt because of market losses during the latter season. Yet the market utilization check shows similar percentage of sales during the two years, namely 81 percent of trees offered to the public. Washington, Oregon and Montana supply 90 percent of imports, but eleven States and British Columbia are represented as importers.

Douglas-fir trees constituted 54 percent of species used, while true firs contributed 40 percent. The remainder were mostly pines.

Marketing Christmas trees is a precarious business, but in total is big business. It seems inevitable that the development of local plantations for this product will increase considerably in future years.

Brush Range Improvement

About 40 million acres in California is considered grazable for domestic livestock. Much of this land bears a natural cover of woodland or chaparral, which aside from its watershed value is of relative little economic use to the owner. For decades the theories held by stockmen owning brushy land and the government foresters were far apart in respect to the use of fire as a land clearing tool. Fire at large is a dangerous element. At the close of the Second World War two factors helped reconcile the issue by making it more economically feasible to invest in the studied treatment and improvement of such land. The land and its products had increased in value, and secondly, there was an increased availability of superior land working equipment and useful chemical aids.

In 1945, legislation was enacted which authorized the Division to engage in range improvement experiments. Another law provided for an advisory service to landowners and clarification of the field officer's position in the issuance of permits to burn vegetation. Also that year a technician was employed by the Division to devote his full time in working with landowners wishing to clear brush by burning.

Since 1945, Division personnel engaged exclusively in range improvement work have been increased to nine technicians. Most of them are assigned to field stations while technical direction is furnished by an Assistant Deputy on the State Forester's staff.

Burning permits are under the administrative control of the local State Ranger. Sometimes fire trucks and fire crews are placed in the vicinity of controlled burns so that they will be available in the event fire escapes beyond prepared lines.

5165 special range improvement burning permits have been issued since 1945 and landowners have burned more than one and one-half million acres. However, the annual number of applications has decreased somewhat during the past several years. In 1957, 372 permits were granted and 109,731 acres were burned. To a much greater extent fire is becoming just one phase rather than the entire treatment in the conversion process from unwanted brush to improved range land. For instance, it is the opinion of Division specialists that about half of the area susceptible to conversion requires proper seeding and sometimes fertilization after clearing. Not all sites which some owners would like to convert are recommended because of the cost and the inherent poor quality of the site.

Four major and several lesser experimental areas are currently established as cooperative projects with the respective landowners and the

University of California Agricultural Experiment Station and other interested agencies. Numerous basic problems in range land management of interest to each particular party are thus coordinated under controlled conditions of treatment and range use. Results from these and numerous general experiments in the field of range land improvement are published from time to time in papers by the Division, the University, Department of Agriculture, and other agencies.

Soil and Vegetation Survey

Beginning in 1947 the Division secured appropriations which provided for cooperation with the California Forest and Range Experiment Station and the Agricultural Experiment Station of the University in the mapping of soils and vegetation on nonagricultural lands. Up to July of 1957 some 5 million acres had been thus mapped and the results printed on maps and pamphlets for public sale at printing cost. This work constitutes a basic inventory of soil potentiality along with a record of existing plant cover. Such work has numerous uses in planning and practical land management, including fire protection and suppression work and especially in brush range improvement planning. It is estimated that a total of 20 million acres of the State should be surveyed and recorded under this project. During 1957-58 the sum of $93,555 was appropriated to the State Forester to be expended in the cooperative soil-vegetation mapping project.

TRAINING OF PERSONNEL

At the close of the Second World War it became obvious that the job of in-service training required the full attention of a special Training Officer. The sorest need for teaching and coordination was unquestionably among the fire crew groups, the foremen, equipment operators and firefighters, many of whom were hired to work only during the fire season.

Experienced leaders command respect from young forest firefighters

The time had long since passed when forest and range firefighting could be left to the valiant volunteer efforts of neighborhood farmers and townsman. The wet sack and pine branch flail have been largely supplanted by complex and expensive mechanical equipment. Proper fire suppression demands something more than all-out effort when the fire is hottest. The goal is to prevent every fire from becoming a large fire, and to prevent the escape of any fire once it has been brought under control. Where hand tools are used (and it is likely that they always will be) concentrated training in their use is necessary to ensure efficiency and personal safety. The modern crew of forest firemen must work as a trained unit under intelligent supervision to accomplish what it is organized and paid to do.

With additions in the number and degree of public services performed by the Division and the consequent increase of employees because of them, plus the growing complexities of laws and society in general it necessarily follows that supervising officials must constantly readjust themselves to their own changing job requirements and at the same time be informed as to the work of their fellow supervisors. For these reasons it has become increasingly necessary to extend employee training throughout the entire organization.

Presently the coordination of training is studied by a Training Committee consisting of the Assistant Deputy State Foresters of each district and the Division Training Officer. During 1957 this committee completed the drafting of a Division Training Policy.

In-service training may be said to exist on four general levels. There is "top management" which brings the staff and district Deputy State Foresters into special group conferences and meetings. "Middle management" embraces the Ranger and Associate Ranger classes. A program, labeled the "Flying Squads", was established to meet the training needs of this management level. This program is largely concerned with brief and concentrated sessions conducted by Sacramento Headquarter teams for specific items of business, such as proper approaches to law enforcement or the operation of newly adopted techniques within the organization. Among typical special training schools for the middle management personnel during 1957 were the following. At the end of January two technicians attended classes sponsored by the Forest School at Berkeley to learn about the value and methods of using punch cards to preserve and utilize forest management statistics. In May forest technicians were assembled at Dew Drop Station

in Amador County to learn from government forest pathologists how to recognize timber tree diseases. Also that month, Division personnel joined in a public training conference at Red Bluff to observe field demonstrations pertaining to the utilization of soil-vegetation maps.

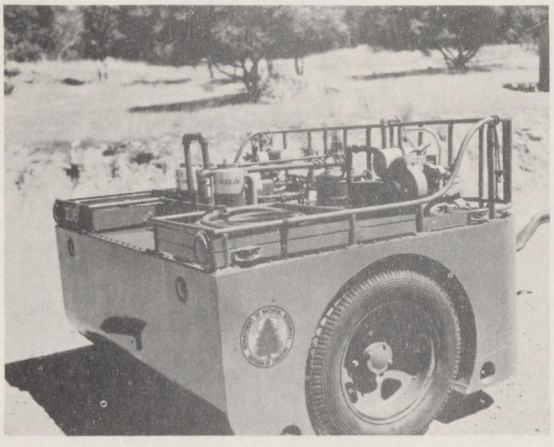
The third level, including Assistant Rangers through the Driver class, along with their special District training will have the opportunity of attending the new and successful Training Centers. The fourth level is the broad, everyday, generally unheralded but vitally important on-the-ground training of crewmen by their leaders who live and work with them.

Two Training Centers (of the academy type common in large police organizations) were made financially possible by appropriations available in July 1957. Both were in operation by November and more than 200 entrants of the Driver class were "graduated" by the opening of 1958 fire season. One Center is located at Sutter Hill, Amador County, the other at Ramona, San Diego County. Each school is supervised by a Ranger and Associate Ranger, while "line" specialists are brought in from the field as guest professors. The preliminary results from these highly concentrated five-week courses is most gratifying.

RESEARCH AND DEVELOPMENT OF METHODS AND EQUIPMENT

During all the years of its existence the State forestry organization has always felt the need for better solutions to problems involved in its regular work and more knowledge about the wildland resources. Neither the "old" Board of Forestry nor the present Division were established to conduct scientific investigations as a first order of business. Nevertheless, from the beginning there have been repeated cooperative research projects

in which the organization has played an important part. Generally the Board or Division, with legislative approval, has acted as temporary employer of some specialist in studies which sometimes involved highly technical problems.



Special backfire trailer designed by Division is equipped with pump and flamethrower. A 500 gal. tank holds compartments of fuel or water as desired.

Thirty years ago the increasing need for such research resulted in the establishment of the California Forest and Range Experiment Station, an arm of the U. S. Forest Service, which is concerned equally with all problems in the field of forest and mountain range management wherever they may occur. The Division has maintained continuous close association with that institution. Any combination of several interested parties may be found as participating cooperators in these

← Uniform and tool kit of the newly developed "helitack" firefighter as shown by a Forest Service man. In 1958 the Division expects to test a few of these low elevation jumpers from helicopters. They use no parachute as do the "smokejumpers" who descend from fixed wing aircraft. This special jump suit is the chief protection during rough landings.

research projects including for example, the University School of Forestry, the National Forests or the lumber and livestock industries. To a great extent the Experiment Station acts as coordinator of activities when several agencies play an active part in the actual research.

At the close of the Second World War the State Forester's office began to receive a small stream of unsolicited letters from the general public with recommendations for challenging the forest fire scourge with bombing planes and other bewildering new scientific devices which the war effort had brought forth. Each letter was courteously answered, although it was not possible to explain that in most cases numerous obstacles existed between the naked idea and the accomplished fact.

The possibilities were never disregarded, however. Such equipment as Army jeeps were acquired at the earliest opportunity. As a matter of fact, during the war years the major branches of the military service contributed thousands of man-hours in fire protection work, and in recent studies such as Operation Firestop the material aid and advice furnished by the military deserves highest commendation.

In 1954 the Department of Natural Resources undertook to outline a plan which is well described by the title of the report resulting from the combined effort on the part of the cooperating government and private agencies. It was called "Proposed Basic Research Program for California's Natural Resources." In 1957 the Board of Forestry extended this preliminary step in what might be termed an inventory of needs and means of accomplishment when it appointed an honorary California Forestry Research Planning Committee composed of representatives of government agencies and institutions. The deliberations and conclusions of the latter committee were

compiled and printed early in 1958 by the State in an attractive 33 page pamphlet entitled Wildland Research in California, the Key to Better Resource Management.

Largely as a result of these presentations the Legislature appropriated $94,000 to be expended during 1957-58 fiscal year for the following listed and described research projects.

1. Fire Protection Economic Study: $6,000.

Under contract with the School of Forestry at Berkeley a faculty specialist will be hired to evaluate fire losses. Briefly, this project could be said to look for the maximum expenditure per acre burned (or perimeter foot of fireline constructed) which may be economically devoted to the suppression of fires originating in different locations. This is a most difficult subject to approach but one worthy of expert scrutiny.

2. Fire Prevention Research; $3,000.

To measure the knowledge of the citizenry regarding fire prevention needs and methods. This is basically a public sampling project to be conducted by specialists from the University of Southern California under contract with the Division. The goal sought is dependable information about what classes of people should be reached and how to most effectively educate them.

3. Lightning Control Study; $23,000.

About 1,000 forest fires originate from lightning strikes in California each year. While the Division suffers from only about 10 percent of this total, lightning fires nevertheless cause something more than an estimated quarter million dollars damage on forest and watershed land protected by the Division. For several years this organization had worked quite independently

in an attempt to dissipate potential lightning cloud conditions by cloud "seeding" from airplanes and from the ground. Recently in the western States this work has developed into Project Skyfire and the Division is presently one of several cooperating agents. Currently $13,000 will be expended by the Division in its own field work. $10,000 has been set aside to assist the California Forest and Range Experiment Station in analyzing and evaluating data gathered during 1957.

4. Fire Climate Study; $15,000.

The question of what the precise weather will be at a known time in the immediate future at some designated spot has always been recognized as the key to intelligent fire control. Very little intensive research work along this line has been accomplished. It is, however, well recognized that a proper study will require a large area of broken topography with many weather instrument stations installed so that minute records may be correlated with the more general Weather Bureau Reports over a considerable period of time. Instrument readings must be made continuously and especially before, during, and after the time that portions of the area are burning. Such observations will reveal the effect of the fire upon the local climate and the effect of local climate upon the fire. Experts in meteorology, instrumentation, fire behavior, and statistics assigned to this important project will be supervised by the California Forest and Range Experiment Station.

5. Fire Weather Index; $10,000.

With the U. S. Weather Bureau and the Experiment Station the Division will cooperate in the refinement of standards of measurement used in the weather reporting scheme which has been developed to indicate the danger

of fires starting and their potential for spreading. Since the project covers practically the entire State for the entire fire season it is obvious that there are many variable conditions to be considered and catalogued.

6. Fire Equipment Development; $3,000.

This small sum will be spent by the Division for making adaptations and additions to standard ground or air motorized equipment, including such things as special fuel tanks, hose laying accessories, hand tools, kitchen equipment and so forth. Also it will enable the Division personnel to make a gesture toward cooperation with other agencies, including the military, in studying the promising aspects of helicopters, "flying platforms" and other ultra-modern machines and devices.

7. Management of Southern California Brush Watershed; $24,000.

For more than 20 years highly intensive studies on the behavior of water upon and under the chaparral watershed on the San Dimas Experimental Forest have been carried on. In 1947 the State, through the Division, began to assist in this vital work and the sum represented here will be similarly expended. Seventy percent of all water used in Los Angeles County is declared to flow from local watersheds. Imported water would be impaired in quality and in its storage facilities without healthy local watersheds. The values at stake in the southern watersheds demand the utmost in understanding for their preservation and proper management.

8. Forest Planting Stock Physiology; $10,000.

In addition to the more than two million acres of poorly restocked private forest land in California nearly as much such land exists in Federal ownership. Attempts to regenerate commercial forests by planting

have generally produced discouraging results. This project will undertake to determine what physiological factors cause the death of tree seedlings at every stage of the growth, storage, and transplanting process. The University School of Forestry will conduct all of the proposed scientific observations. For the most part the planting stock used will be produced and handled under controlled conditions by the Division nurseries. It is contemplated that eight years will be required to complete this single phase of research into forest tree regeneration.

Any report regarding recent practical studies of forestry problems in California, and specifically fire protection, should make mention of "Operation Firestop" which was conducted during the calendar year of 1954. This operation was largely instigated by the enthusiasm of Deputy State Forester Mace who had become concerned about applying some of the object lessons learned about fire catastrophe in the recent war to Southern California rural and urban areas. (See Publications).

An executive committee was composed of fire officials from the Division, Forest Service, State and Federal Civil Defense, and both city and county Fire Departments of Los Angeles, the State Fire Marshall, the Pacific Intermountain Association of Fire Chiefs. This committee directed the conduct of Operation Firestop. Splendid cooperation was received from military and private industrial agencies in furnishing equipment of all types and generally providing the specialists required to operate and demonstrate field tests on the ground. The description and results of Operation Firestop were recorded in thirteen publications processed by the Regional Office of the U. S. Forest Service.*

* See these documents listed under Publications.

PROPERTY

In 1927 the Division of Forestry owned practically nothing, which is another way of saying that practically no State property was being used and supervised by the State Forester's organization. That year the growing State Park properties were transferred to the control of a new division in State government. Rangers drove their own cars on a mileage rental basis. There were no firetrucks. Lookout structures and telephone lines had come into existence from so many sources that it would probably have required special legislation to precisely establish ownership in many cases.

In 1957 the value of properties for which the Division is responsible is estimated to be about as follows:

land	$ 2,536,000
structures and plant facilities	10,283,000
Accountable Property	8,800,000
Expendible Property; hand tools, supplies, etc.	4,000,000 (approx.)

It is to be noted that much of the land under structures, and especially land used for roads and telephone lines is private property in possession of the State only for a specific public use, and often at no cost to the State.

There follows a listing of motorized equipment and structures owned and controlled by the Division of Forestry.

Motorized Equipment (as of 7/1/58)

Personnel transportation	
sedans	104
other	470

Firefighting Equipment	
pumpers	411
bulldozers	71
transports	54
plowing equipment	21
misc. & special	74
Construction and Maint.	
maintainers	23
dump trucks	27
cement mixers	32
misc.	55
Total motorized equipment units	1342

Structures

Honor Camps	
barracks	23
messhalls	20
offices	35
equip bldgs & warehouse	39
shops	14
residences	28
recreation bldgs	12
misc.	104
	275
Admin and Fire Control	
barracks	77
combination barracks, messhall, etc.	209
residences	97
res. garages	62
equip bldgs	162
shelter and sheds	47
warehouses	47
shops	21
offices	50
repeater vaults	27
lookouts	83
lookout aux. bldgs	63
gas, oil houses	113
pump houses	99
misc.	176
	1333

MEETINGS AND CONFERENCES

A Ranger Meeting was held on April 24, 25, 1957, in San Bernardino where about 60 Division personnel discussed pertinent administrative business. The State Forester attended the Association of State Foresters Convention at Longview, Washington, Oct. 10-12. He also was present at the annual meeting of the Western Forestry and Conservation Association at Seattle on Dec. 10. With him was Deputy L. T. Petersen who discussed the Honor Camp program of California, and Fire Prevention Officer R. A. Taylor.

Ranger F. R. Herbert was in Chicago in January and at Salem on July 19-20 to represent the Division on the executive council and at the annual conference of the Forestry Conservation Communications Association.

In August, Assistant Deputy L. R. Chatten went to Washington, D.C. to attend a so-called "Helitack" Committee meeting where progress in aerial firefighting, especially with the use of helicopters, was evaluated. The Army Engineers from Fort Belvoir Development and Testing Laboratory presented current research findings and projects.

Throughout the State during 1957 there were numerous industry conferences attended by Division personnel who often participated in discussions. In August, the Division met several times with a special study team from Battelle Memorial Institute of Columbus, Ohio, which was engaged, on behalf of the Forest Service, in analyzing the current status and need for the Federal Clarke-McNary Act.

In March the Division took an active part in helping bring up to date this State's position in the nationwide Rural Defense Plan in response to the directive of the President wherein responsibility was placed upon the

U. S. Forest Service to correlate with local fire control and civil defense agencies a master plan to meet extreme disaster emergencies.

DIVISION OF FORESTRY BUDGET
(From Estimate of Expenditures F.Y. 1957-58-Gov. Budget)

Expenditures

(The Division Organization)

	Salary & Wages	Operating	Equipment
Administration	476,150	378,883	35,560
Fire Prev. Educ.	57,411	48,811	21,830
Dist. Hdqt's.	900,804	211,772	88,054
Field	7,794,812	1,817,403	838,207
Honor Camps	901,223	1,196,059	155,714
Forest Mgm't.	279,778	72,886	13,020
Nurseries	53,459	21,105	6,821
Range Improv.	120,322	21,470	5,974
	$10,583,959	$3,768,389	$1,165,180

(a) Total above*		$15,517,528
(b) Fire Supp. Emergency	320,000	
Capital Outlay (3 yr. budget)		
Real property acquisition	165,340	
Major construction	4,073,432	
Minor construction	361,168	
(c)	$4,599,940	

("Other Current Expenses"-i.e. Contracts)

Fire Protection, State Interest land. (see Fire Statistics).

Contract Counties	1,156,135
U. S. Forest Service	953,677
Blister Rust coop.	115,000
Insect Control coop (as required)	35,000
Veg-soil mapping	93,555
(d) Total	$2,353,367

Total est. expenditures above; (items (a)(b)(c)(d)) $22,790,835

* No representation is included in above figures for more than $2,000,000 expended and reimbursed through the "Schedule A" contracts to perform fire protection services for the several counties (see page 17).

Anticipated Income Reimbursements, aid and service charges

Federal aid	
Clarke-McNary (fire)	1,272,900
" " (nursery)	31,754
"Small watersheds"	10,837
Fire research	7,804
Service Forestry	28,820
U. S. Bureau Land Mgt. fire contracts	
forest land	189,564
non-forest land	59,679
Service to employees (rents, meals)	423,001
Office rent, State agencies	25,049
Honor Camp labor; State Parks	123,120
" " " ; others	38,569
Misc.	9,461
Total budgeted anticipated income*	$2,220,558

*Does not include $620,440.05 revenue from forest products sales in 1957. Does not include County reimbursements for Schedule A contracts.

CRC/PB 6-58 2M

PRINCIPAL
FUNCTIONAL AND ADMINISTRATIVE OFFICERS

STATE FORESTER'S OFFICE - SACRAMENTO

Executive

F. H. Raymond	State Forester
John Callaghan	Chief Deputy
C. R. Clar	Ass't Exec.Officer (State Board of Forestry)

Fire Control

W. D. Winters	Deputy State Forester (in charge)
John W. Tomblin	Assistant (Operations)
Leonard Chatten	Assistant (Research and Automotive Management)

Engineering and Honor Camps

L. T. Petersen	Deputy State Forester (in charge)
Wm. T. Jacobson	Assistant

Business Management

Melvin Pomponio	Deputy State Forester (in charge)
Michael O. Schori	Assistant

Training

Leon J. Lefebvre	Training Officer

Fire Prevention

Eugene H. Bertsch	Deputy State Forester (in charge)
Raleigh A. Taylor	Assistant (Fire Prevention & Public Relations)
Vacant	Assistant (Law Enforcement)

Forest Management

T. Arvola	Deputy State Forester (in charge)
Dr. L. T. Burcham	Assistant (Range & Watershed Management)
E. Earl Sechrist	Assistant (Forest Management)
Ronald Adams	Assistant (Forest Regeneration)

DISTRICT ONE - SANTA ROSA

DISTRICT HEADQUARTERS

C. W. Fairbank	Deputy State Forester
Emery Sloat	Assistant (Operations)
Stuart Schick	Assistant (Fire Prevention, Law Enforcement)
Robert K. Maclean	Assistant (Forest & Range Management)

Forestry Work Camps

Jack V. Cullumber	Project Supervisor (High Rock)
Wallace R. Hunt	Project Supervisor (Parlin Fork)
Jack J. Cloward	Project Supervisor (Chamberlain Creek)

Jackson State Forest

Jean E. Sindel	Resident Manager

STATE FOREST RANGER UNITS

Humboldt

William Siler	Ranger (in charge)
Ernest Sipola	Associate

Lake

James W. Miller	Ranger (in charge)
Marion W. Steele	Associate

Mendocino

Wm. F. Mann	Ranger (in charge)
Frank Weatherford	Associate

Napa

Francis Gowell	Ranger (in charge)
John W. Morrow	Associate

Sonoma

Jack W. Kessler	Ranger (in charge)
Walter R. Bolster	Associate

DISTRICT TWO - REDDING

DISTRICT HEADQUARTERS

George R. Grogan	Deputy State Forester (in charge)
Herbert Kaufner	Assistant (Operations)
Ray Higgins	Assistant (Fire Prevention, Law Enforcement)
Larry Richey	Assistant (Forest & Range Management)

Forestry Work Camps

Lee L. Lange	Project Supervisor (Crystal Creek)
Neil Edmonds	Project Supervisor (Magalia)
Joseph D. Caporusso	Project Supervisor (Plum Creek)

Latour State Forest

Roy W. Ritchie	Resident Manager

STATE FOREST RANGER UNITS

Butte

Chas. P. Campbell	Ranger (in charge)
Harry McKeen	Associate
Jack Scholey	Associate

Lassen

Norman F. Nicholson	Ranger (in charge)
Merrill Swain	Associate

Shasta

John S. Lockhart	Ranger (in charge)
Ralph L. Smith	Associate

Siskiyou

Roy Bengard	Ranger (in charge)
Roscoe C. Savage	Associate

Tehama

Wesley J. Hufford	Ranger (in charge)
Robert E. Green	Associate

DISTRICT THREE - SACRAMENTO

DISTRICT HEADQUARTERS

Fred M. Dunow	Deputy State Forester (in charge)
Donald E. Knowlton	Assistant (Operations)
Louis Gerlinger	Assistant (Fire Prevention, Law Enforcement)
Herman P. Meyer	Assistant (Forest & Range Management)

Training Center

Buel B. Hunt	Ranger (in charge)
Harold G. Nixon	Associate

Forestry Work Camps

Oliver Huberty	Project Supervisor (Pine Grove)
William E. Merle	Project Supervisor (Iron Mine)
Robert Harris	Project Supervisor (Vallecito)

STATE FOREST RANGER UNITS

Amador

Godfrey German	Ranger (in charge)

Calaveras

Miles Young	Ranger (in charge)
Walter Mueller	Associate

El Dorado

Robert R. Carey	Ranger (in charge)
Everett Fox	Associate

Nevada

Robert Burns	Ranger (in charge)
W. H. Brownlee	Associate

Placer

Wm. F. Brock	Ranger (in charge)
James R. Warford	Associate

Tuolumne

Jack E. Amundsen	Ranger (in charge)
Loren E. Hill	Associate

H.P. Reinecker Yuba Ranger (in charge)

DISTRICT FOUR - FRESNO

DISTRICT HEADQUARTERS

C. E. Metcalf	Deputy State Forester (in charge)
Howard E. Moore	Assistant (Operations)
Deane Bennett	Assistant (Fire Prevention, Law Enforcement)
Dean Schlobohm	Assistant (Forest & Range Management)

Forestry Work Camps

Willard R. Haley	Project Supervisor (Miramonte)
John N. Clark	Project Supervisor (Coarsegold)

Mountain Home State Forest

Floyd Otter	Resident Manager

STATE FOREST RANGER UNITS

Fresno

William Pennington	Ranger (in charge)
John C. Hansen	Associate
Alvin B. Filippini	Associate
Donald Roleder	Associate

Kings

Curtis Lindley	Associate Ranger (in charge)

Madera

Robert J. Moran	Ranger (in charge)
Bradford Williams	Associate

Mariposa

Bruce Hufford	Ranger (in charge)
Frank E. Crossfield	Associate

Tulare

George Phibbs	Ranger (in charge)
James S. Stokes	Associate

DISTRICT FIVE - MONTEREY

DISTRICT HEADQUARTERS

Lewis A. Moran	Deputy State Forester (in charge)
Carl Albertus	Assistant (Operations)
Mace Pewtherer	Assistant (Fire Prevention, Law Enforcement)
John Dowdakin	Assistant (Forest & Range Management)

Forestry Work Camps

Ernest Pennington	Project Supervisor (Ben Lomond)
Gail Huffman	Project Supervisor (Slack Canyon)

STATE FOREST RANGER UNITS

Monterey

Willard Austin	Ranger (in charge)
Richard T. Ford	Associate

San Benito

John Wade	Ranger (in charge)
Glenn Atwood	Associate

San Luis Obispo

James Dulitz	Ranger (in charge)
Stephen Nash-Boulden	Associate

Santa Clara

George Britton	Ranger (in charge)
Robert W. Ford	Associate

Santa Cruz

Lester Gum	Ranger (in charge)
Francis W. Bradford	Associate

DISTRICT SIX - RIVERSIDE

DISTRICT HEADQUARTERS

James K. Mace	Deputy State Forester (in charge)
John Hastings	Assistant (Operations)
Norman Harris	Assistant (Fire Prevention, Law Enforcement)
Robert H. Blanford	Assistant (Forest Management)
Joseph C. Springer	Assistant (Range Improvement)

Training Center

Walter G. Francis	Ranger (in charge)
Donal L. Russell	Associate

Forestry Work Camps

Clarence Brown	Project Supervisor (Rainbow)
Stanley L. Moe	Project Supervisor (Minnewawa)
Edward Schuckert	Project Supervisor (Oak Glenn)
Harold C. Rolland	Project Supervisor (Morena)
Joe Griggs	Project Supervisor (Pilot Rock)
Elmer R. Benson	Project Supervisor (Puerta La Cruz)

STATE FOREST RANGER UNITS

Orange

Joseph Scherman	Ranger (in charge)
Carl Downs	Associate

Riverside

Truman Holland	Ranger (in charge)
Waldo Sherman	Associate
Thomas J. Henson	Associate

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Thomas Bryan	Associate
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James G. Fenlon	Ranger (in charge)
Richard Groninger	Associate
Charles H. Walter	Associate

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